Fig. 1

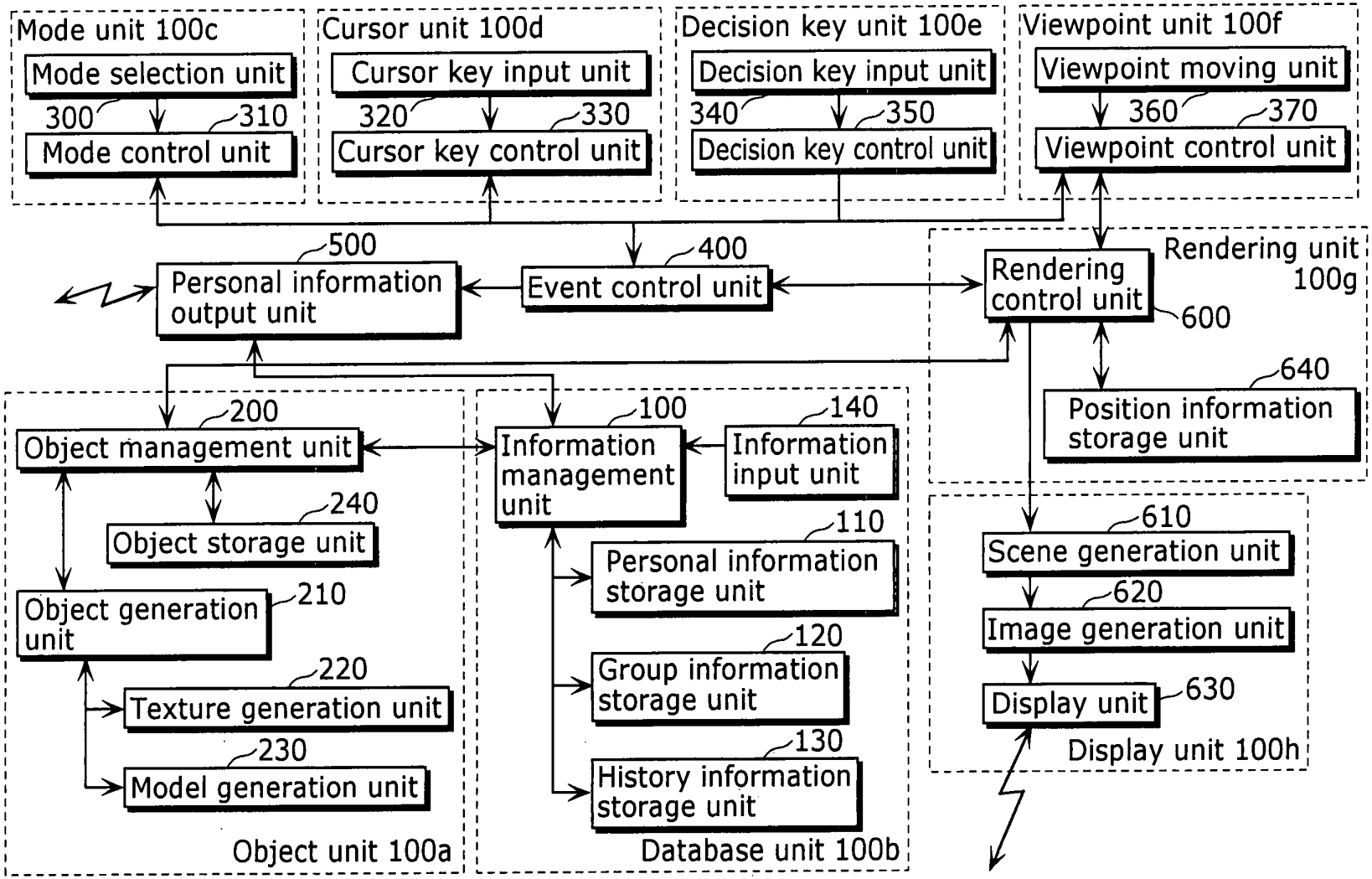

Mode unit 100c
Mode selection unit
300
310
Mode control unit
Cursor unit 100d
Cursor key input unit
320
330
Cursor key control unit
Decision key unit 100e
Decision key input unit
340
350
Decision key control unit
Viewpoint unit 100f
Viewpoint moving unit
360
370
Viewpoint control unit
500
Personal information output unit
400
Event control unit
Rendering unit 100g
Rendering control unit
600
640
Position information storage unit
200
Object management unit
240
Object storage unit
210
Object generation unit
220
Texture generation unit
230
Model generation unit
Object unit 100a
100
Information management unit
140
Information input unit
110
Personal information storage unit
120
Group information storage unit
130
History information storage unit
Database unit 100b
610
Scene generation unit
620
Image generation unit
Display unit
630
Display unit 100h

Fig. 2

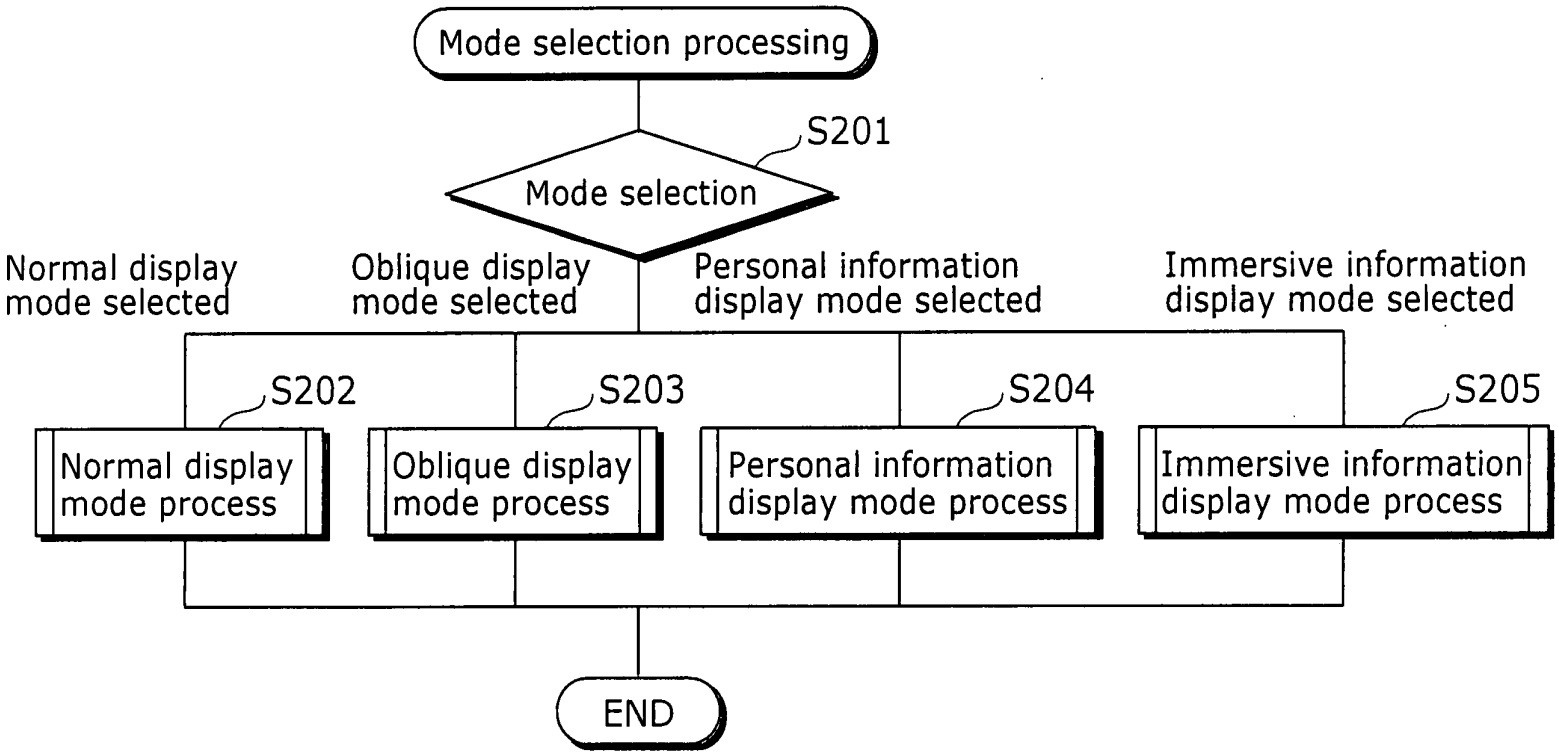

Mode selection processing
S201
Mode selection
Normal display mode selected
Oblique display mode selected
Personal information display mode selected
Immersive information display mode selected
S202
S203
S204
S205
Normal display mode process
Oblique display mode process
Personal information display mode process
Immersive information display mode process
END

Fig. 3

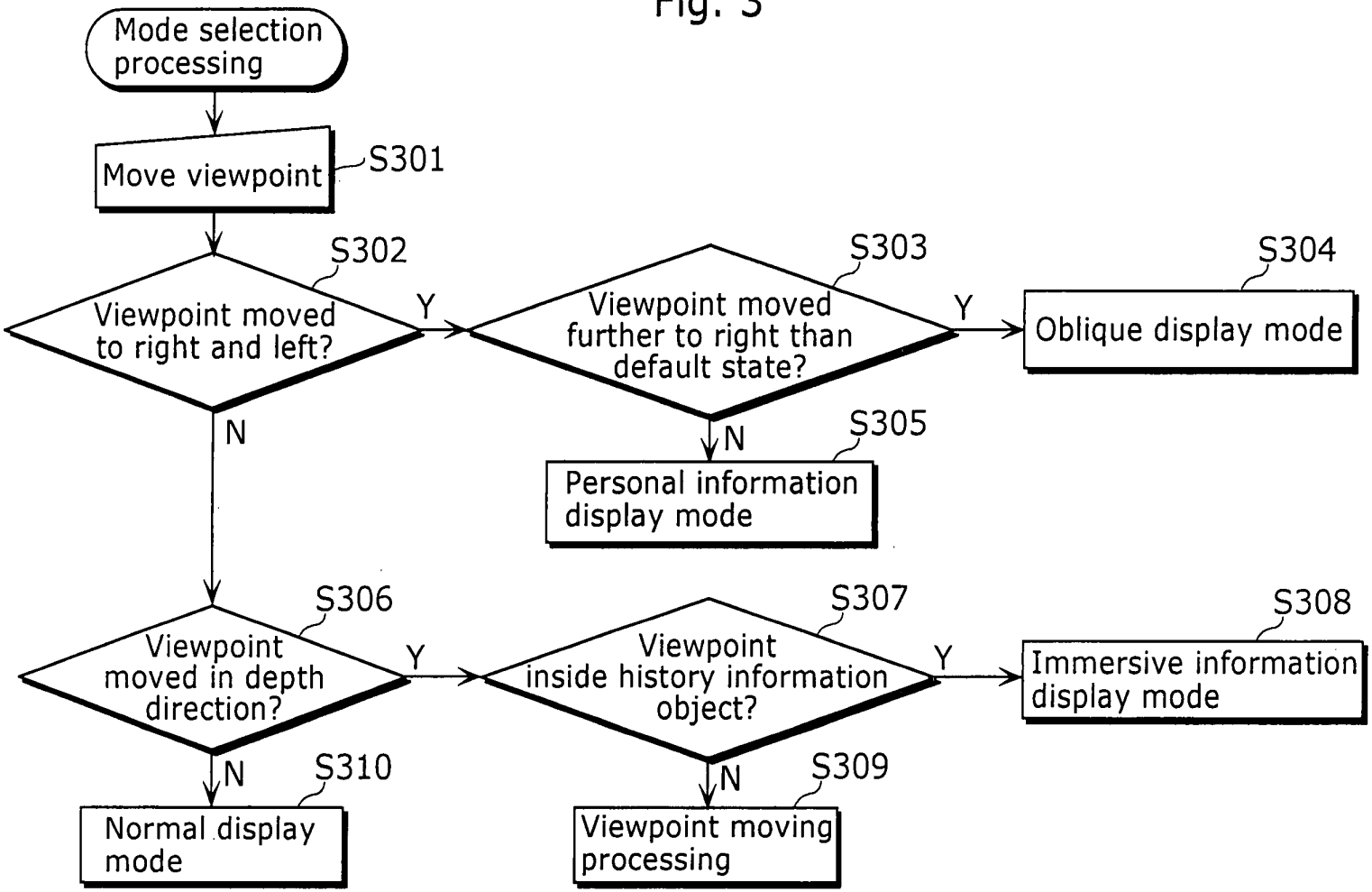
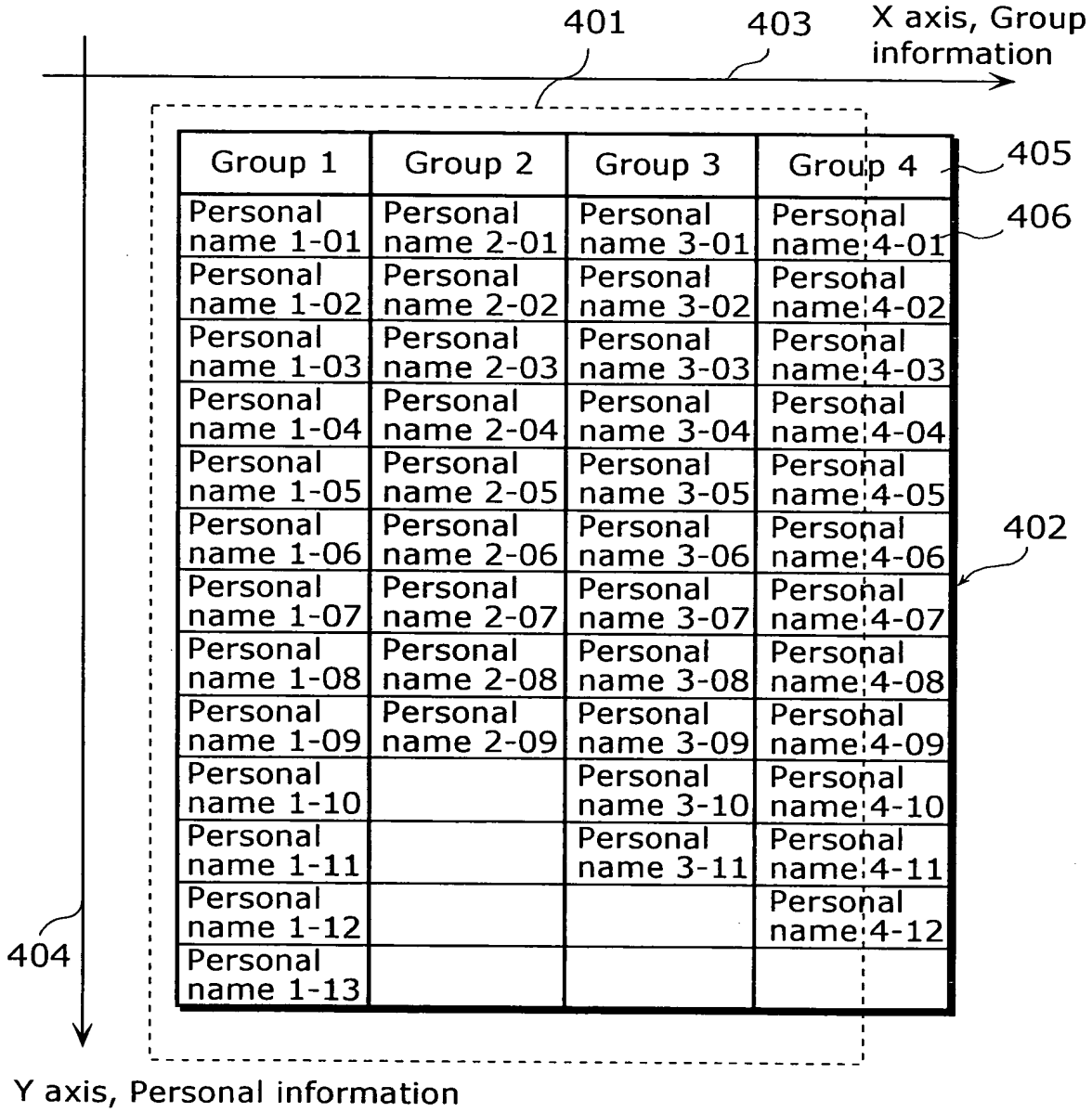

Mode selection processing
Move viewpoint
S301
S302
Viewpoint moved to right and left?
Y
S303
Viewpoint moved further to right than default state?
Y
S304
Oblique display mode
N
N
S305
Personal information display mode
S306
Viewpoint moved in depth direction?
Y
S307
Viewpoint inside history information object?
Y
S308
Immersive information display mode
N
S310
Normal display mode
N
S309
Viewpoint moving processing

Fig. 4



Group 1	Group 2	Group 3	Group 4
Personal name 1-01	Personal name 2-01	Personal name 3-01	Personal name 4-01
Personal name 1-02	Personal name 2-02	Personal name 3-02	Personal name 4-02
Personal name 1-03	Personal name 2-03	Personal name 3-03	Personal name 4-03
Personal name 1-04	Personal name 2-04	Personal name 3-04	Personal name 4-04
Personal name 1-05	Personal name 2-05	Personal name 3-05	Personal name 4-05
Personal name 1-06	Personal name 2-06	Personal name 3-06	Personal name 4-06
Personal name 1-07	Personal name 2-07	Personal name 3-07	Personal name 4-07
Personal name 1-08	Personal name 2-08	Personal name 3-08	Personal name 4-08
Personal name 1-09	Personal name 2-09	Personal name 3-09	Personal name 4-09
Personal name 1-10		Personal name 3-10	Personal name 4-10
Personal name 1-11		Personal name 3-11	Personal name 4-11
Personal name 1-12			Personal name 4-12
Personal name 1-13			

Fig. 5

501

Group ID-0	Personal name ID-0	Personal name ID-4	Personal name ID-5	----
Group ID-1	Personal name ID-1	Personal name ID-3	----	
Group ID-2	Personal name ID-2	----		
⋮	⋮			

Fig. 6

	(x. y)
Group information object 1	(0. 0)
Group information object 2	(1. 0)
⋮	⋮
Personal information object 1	(0. 1)
Personal information object 2	(0. 2)
⋮	⋮

601

Fig. 7

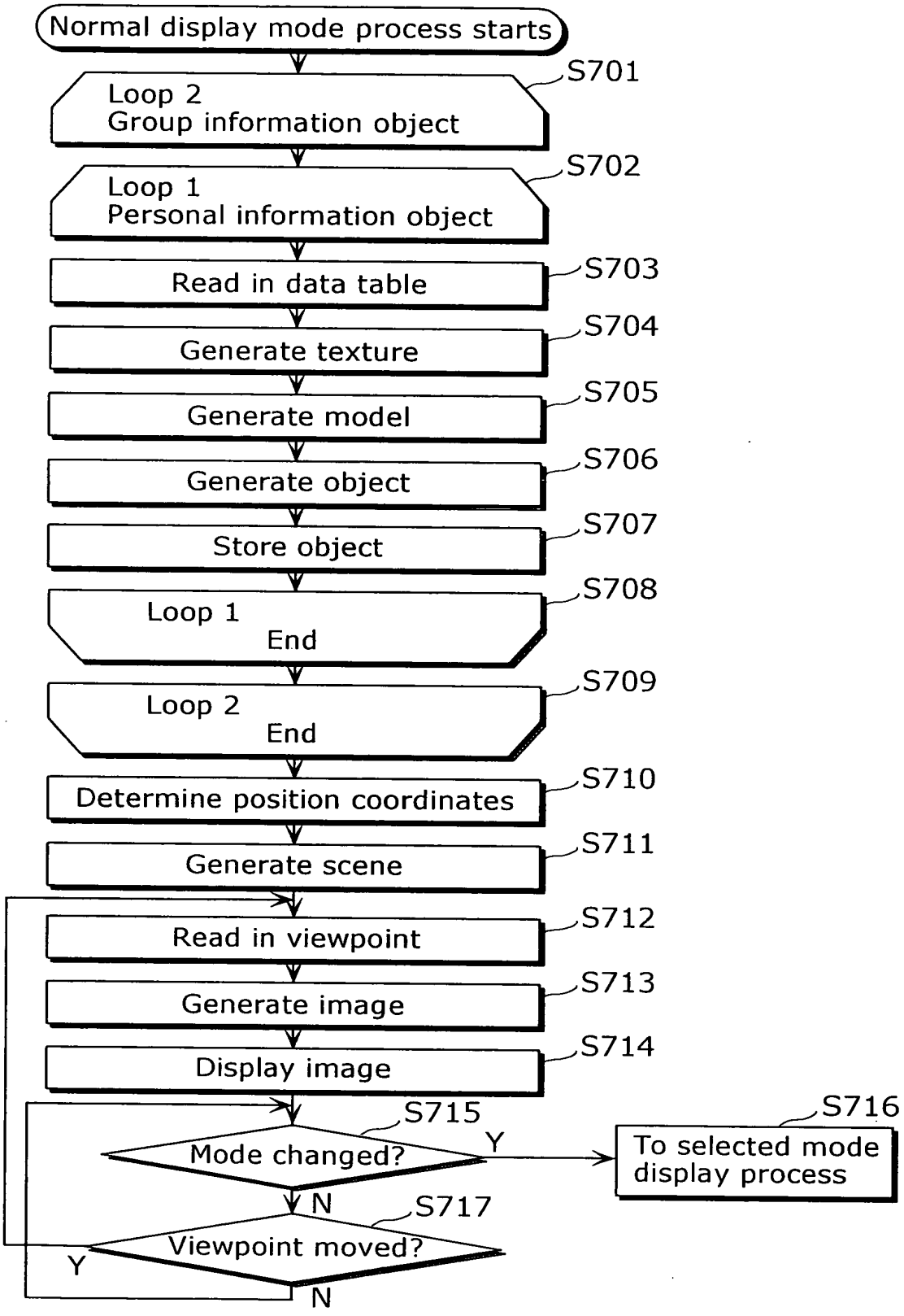

Normal display mode process starts
S701
Loop 2
Group information object
S702
Loop 1
Personal information object
S703
Read in data table
S704
Generate texture
S705
Generate model
S706
Generate object
S707
Store object
S708
Loop 1
End
S709
Loop 2
End
S710
Determine position coordinates
S711
Generate scene
S712
Read in viewpoint
S713
Generate image
S714
Display image
S715
Mode changed?
Y
S716
To selected mode display process
N
S717
Viewpoint moved?
Y
N

Fig. 8

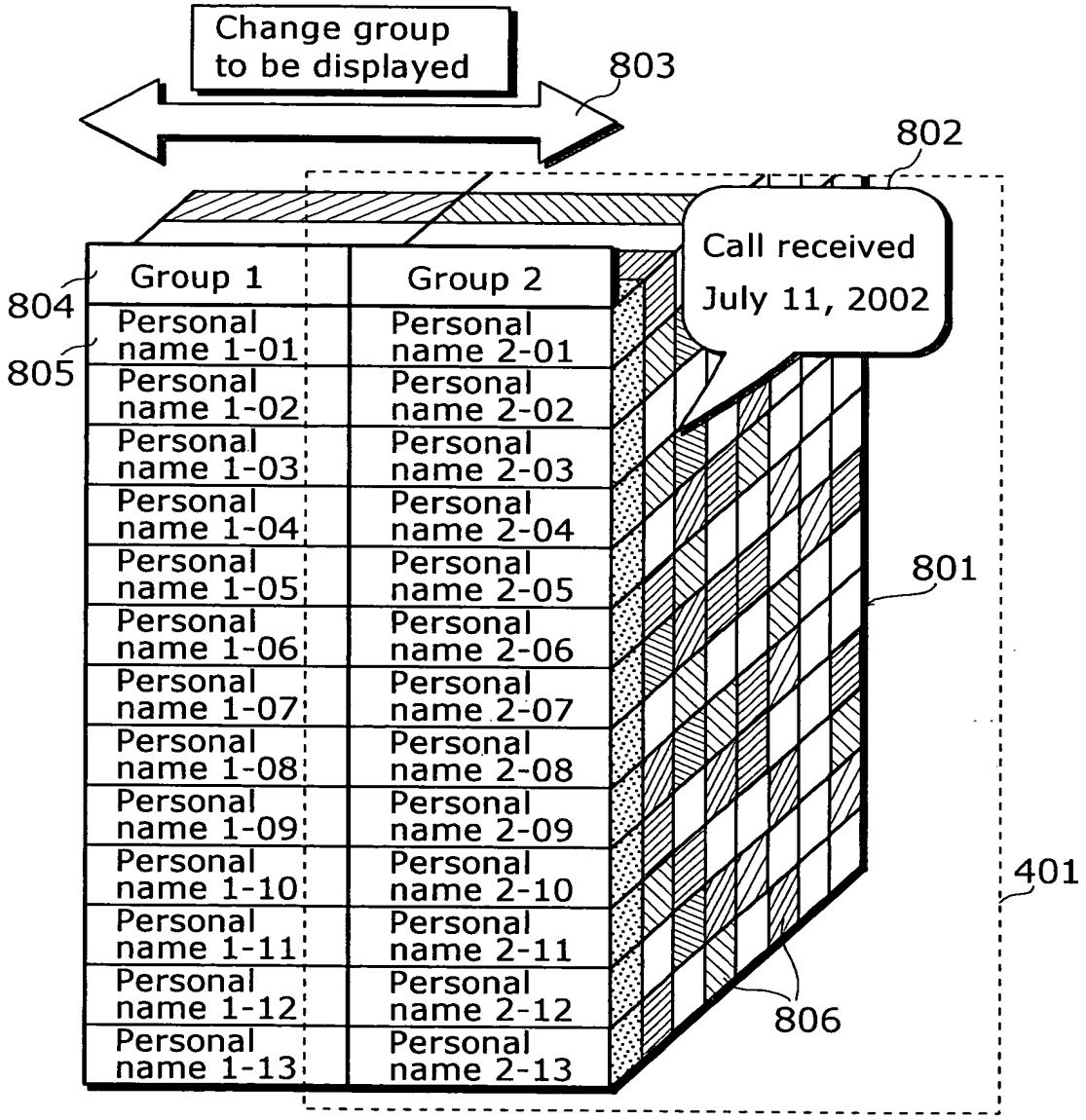

Change group to be displayed
803
802
Call received July 11, 2002
804
805
Group 1
Group 2
Personal name 1-01
Personal name 2-01
Personal name 1-02
Personal name 2-02
Personal name 1-03
Personal name 2-03
Personal name 1-04
Personal name 2-04
Personal name 1-05
Personal name 2-05
Personal name 1-06
Personal name 2-06
Personal name 1-07
Personal name 2-07
Personal name 1-08
Personal name 2-08
Personal name 1-09
Personal name 2-09
Personal name 1-10
Personal name 2-10
Personal name 1-11
Personal name 2-11
Personal name 1-12
Personal name 2-12
Personal name 1-13
Personal name 2-13
801
401
806

Fig. 9

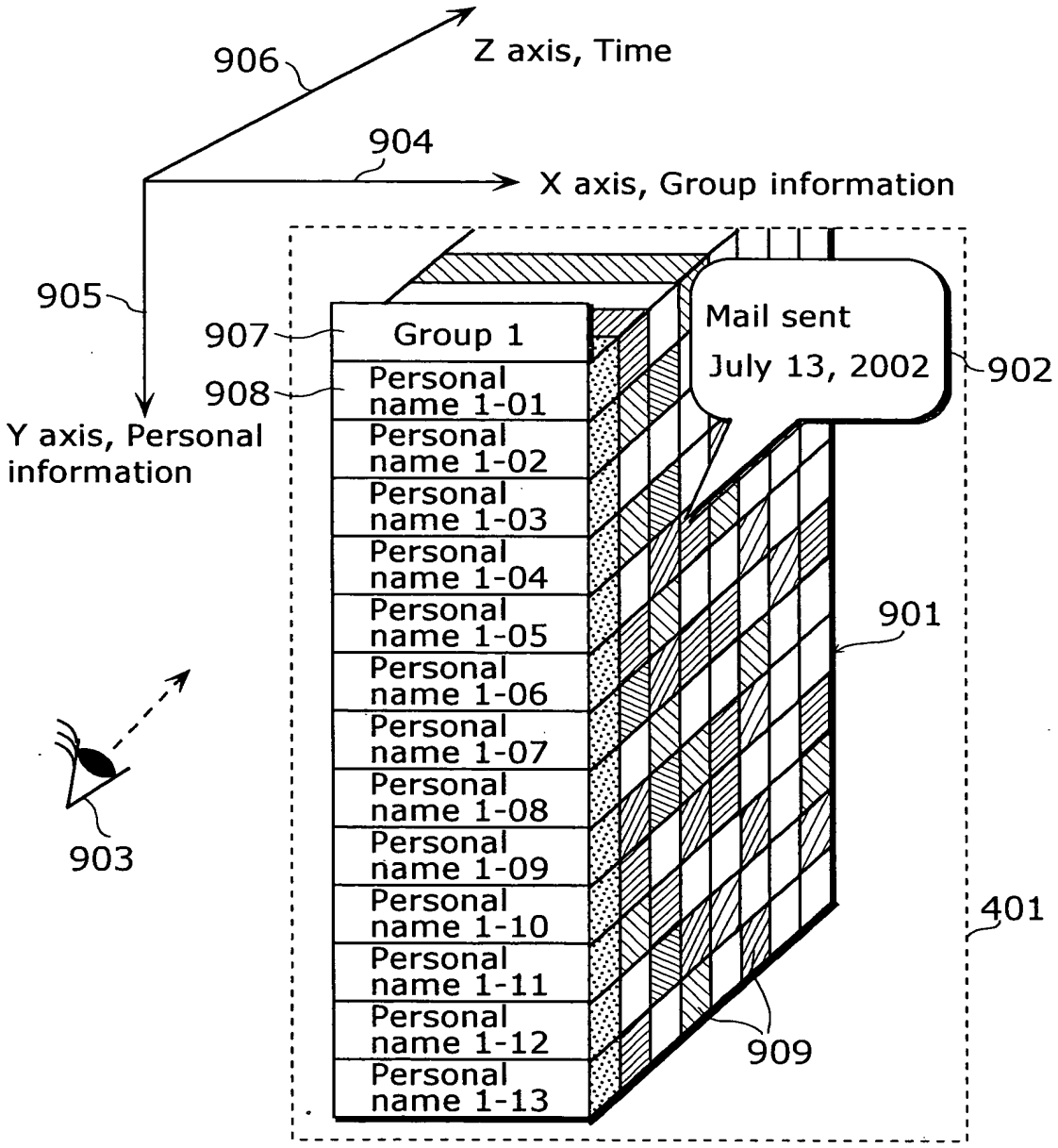

906
Z axis, Time
904
X axis, Group information
905
Y axis, Personal information
907
908
Group 1
Personal name 1-01
Personal name 1-02
Personal name 1-03
Personal name 1-04
Personal name 1-05
Personal name 1-06
Personal name 1-07
Personal name 1-08
Personal name 1-09
Personal name 1-10
Personal name 1-11
Personal name 1-12
Personal name 1-13
Mail sent
July 13, 2002
902
901
903
909
401

Fig. 10

1001

Personal name ID-0	History ID-0	History ID-3	History ID-4	----
Personal name ID-1	History ID-1	History ID-5	----	
Personal name ID-2	History ID-2	----		
⋮	⋮			

Fig. 11

	(x. y. z)
Group information object 1	(0. 0. 0)
Personal information object 1	(0. 1. 0)
Personal information object 2	(0. 2. 0)
⋮	⋮
History information object 1	(0. 1. 1)
History information object 2	(0. 2. 2)
⋮	⋮

1101

Fig. 12

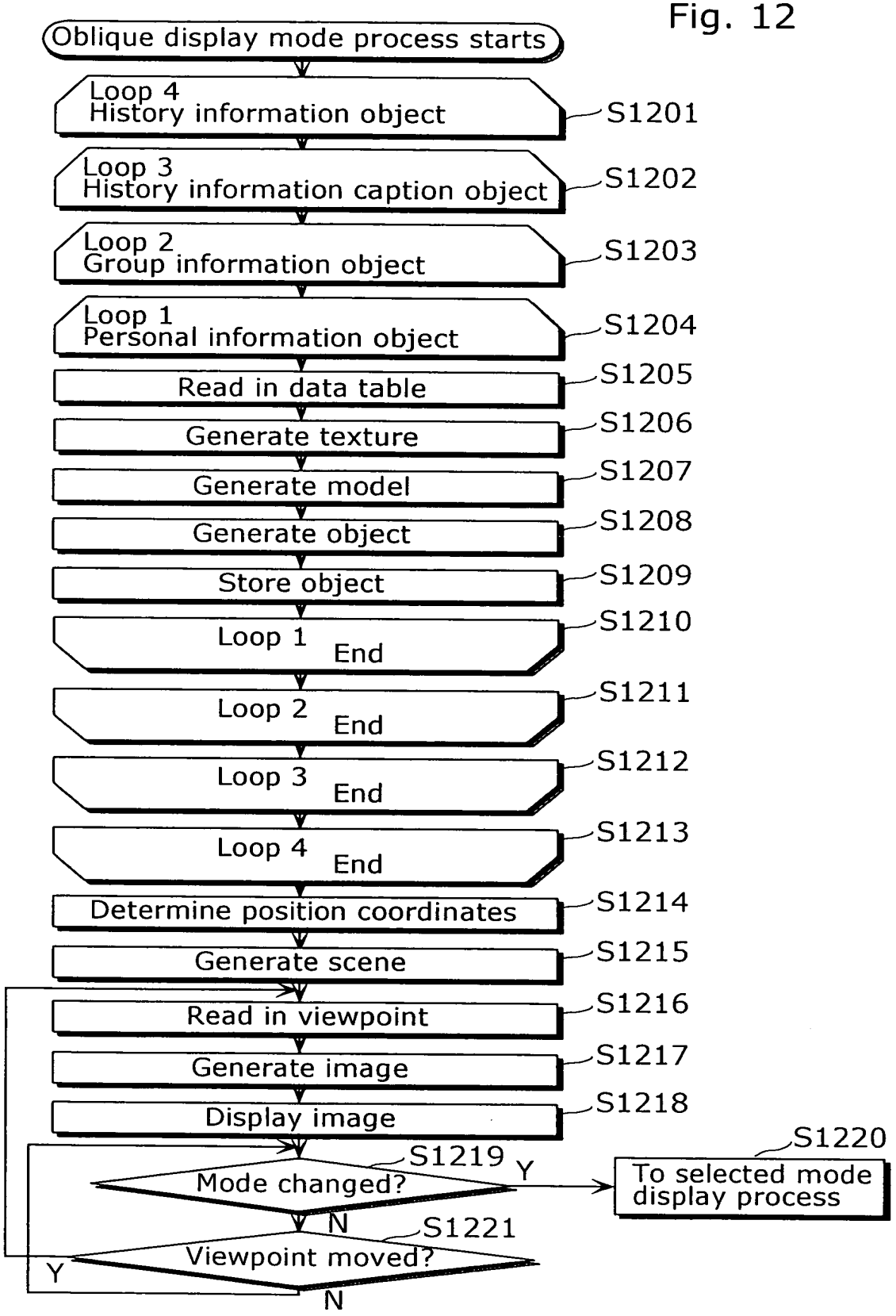

Oblique display mode process starts
Loop 4
History information object
S1201
Loop 3
History information caption object
S1202
Loop 2
Group information object
S1203
Loop 1
Personal information object
S1204
Read in data table
S1205
Generate texture
S1206
Generate model
S1207
Generate object
S1208
Store object
S1209
Loop 1
End
S1210
Loop 2
End
S1211
Loop 3
End
S1212
Loop 4
End
S1213
Determine position coordinates
S1214
Generate scene
S1215
Read in viewpoint
S1216
Generate image
S1217
Display image
S1218
S1219
Mode changed?
Y
N
S1220
To selected mode display process
S1221
Viewpoint moved?
Y
N

Fig. 13A

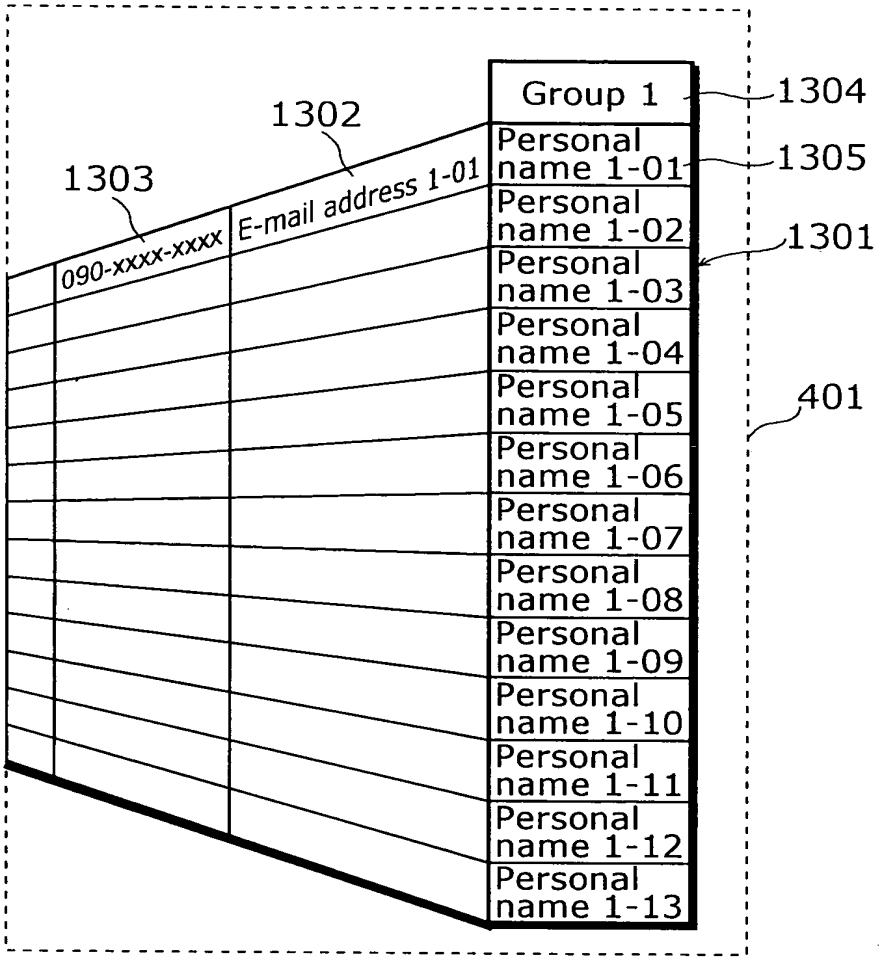


Fig. 13B

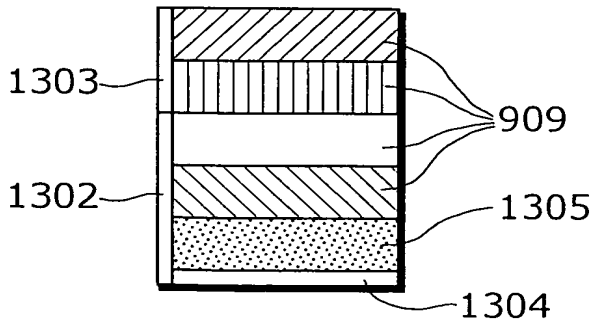


Fig. 14

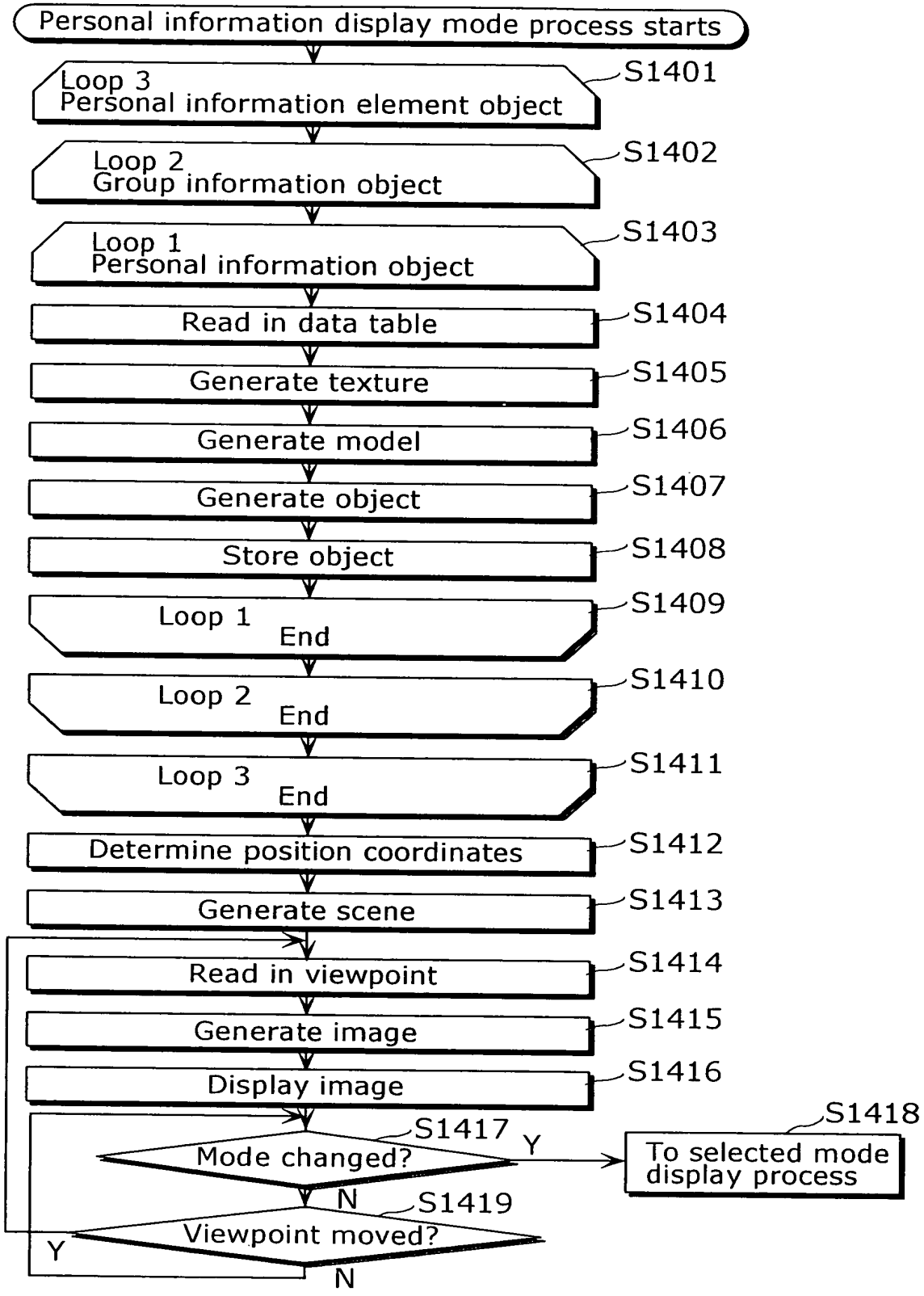

Personal information display mode process starts
Loop 3
Personal information element object
S1401
Loop 2
Group information object
S1402
Loop 1
Personal information object
S1403
Read in data table
S1404
Generate texture
S1405
Generate model
S1406
Generate object
S1407
Store object
S1408
Loop 1
End
S1409
Loop 2
End
S1410
Loop 3
End
S1411
Determine position coordinates
S1412
Generate scene
S1413
Read in viewpoint
S1414
Generate image
S1415
Display image
S1416
S1417
Mode changed?
Y
S1418
To selected mode display process
N
S1419
Viewpoint moved?
Y
N

Fig. 15

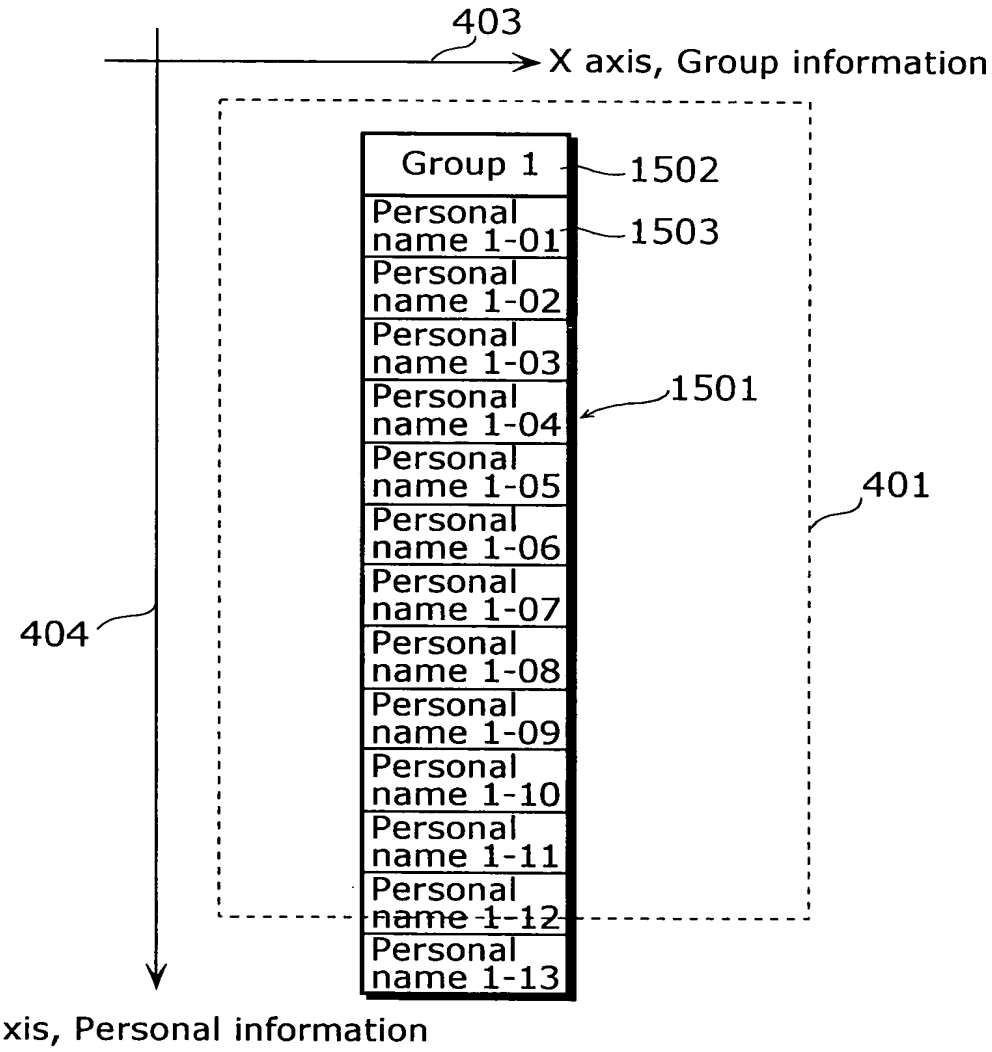
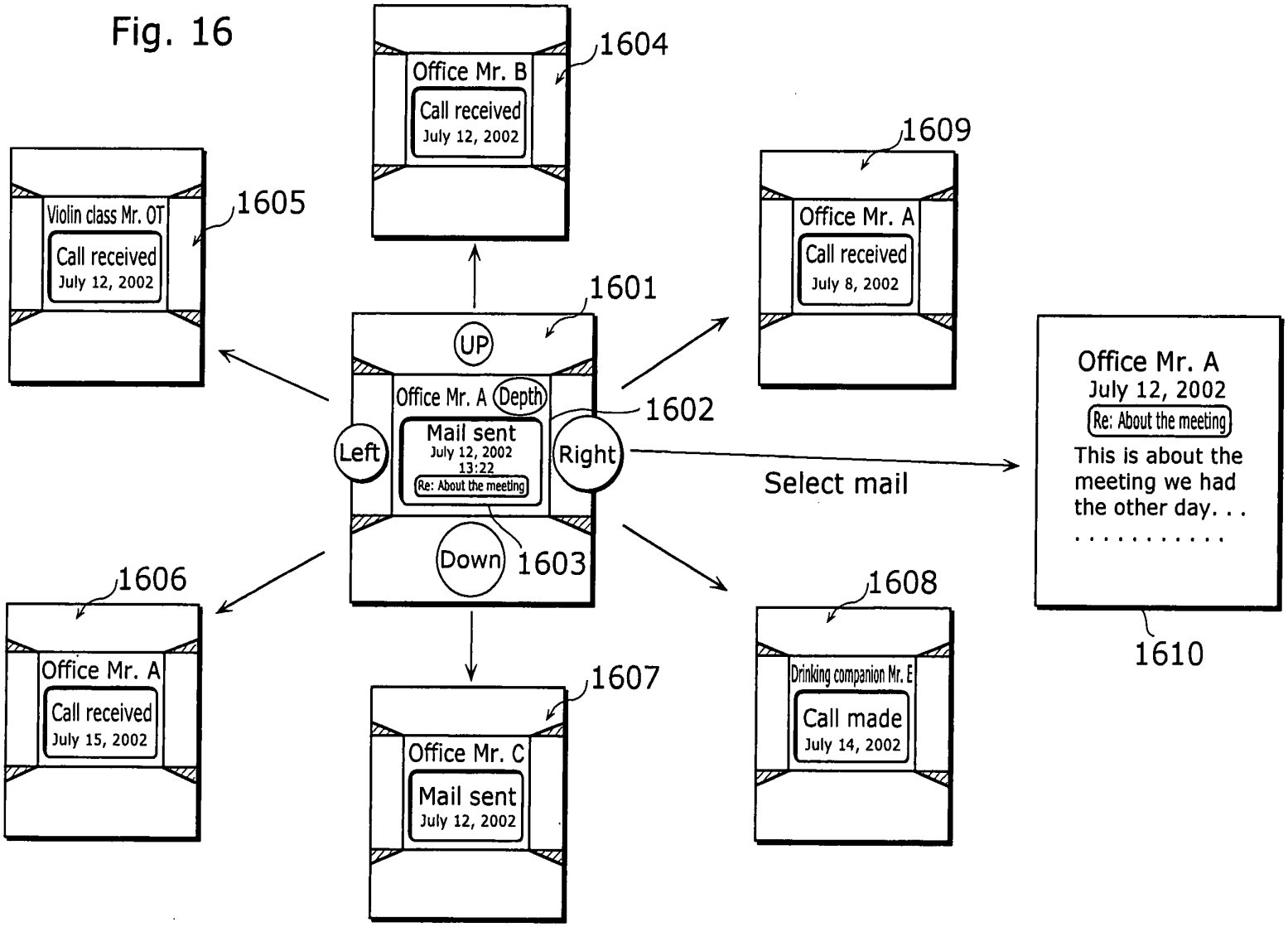

403
X axis, Group information
Group 1
1502
Personal name 1-01
1503
Personal name 1-02
Personal name 1-03
Personal name 1-04
1501
Personal name 1-05
Personal name 1-06
Personal name 1-07
Personal name 1-08
Personal name 1-09
Personal name 1-10
Personal name 1-11
Personal name 1-12
Personal name 1-13
401
404
Y axis, Personal information

Fig. 16


Office Mr. B
Call received
July 12, 2002
1604
Violin class Mr. OT
Call received
July 12, 2002
1605
1609
Office Mr. A
Call received
July 8, 2002
1601
UP
Office Mr. A
Depth
Mail sent
July 12, 2002
13:22
Re: About the meeting
1602
Left
Right
Down
1603
Select mail
Office Mr. A
July 12, 2002
Re: About the meeting
This is about the meeting we had the other day. . .
. . . . . .
1610
1606
Office Mr. A
Call received
July 15, 2002
1607
Office Mr. C
Mail sent
July 12, 2002
1608
Drinking companion Mr. E
Call made
July 14, 2002

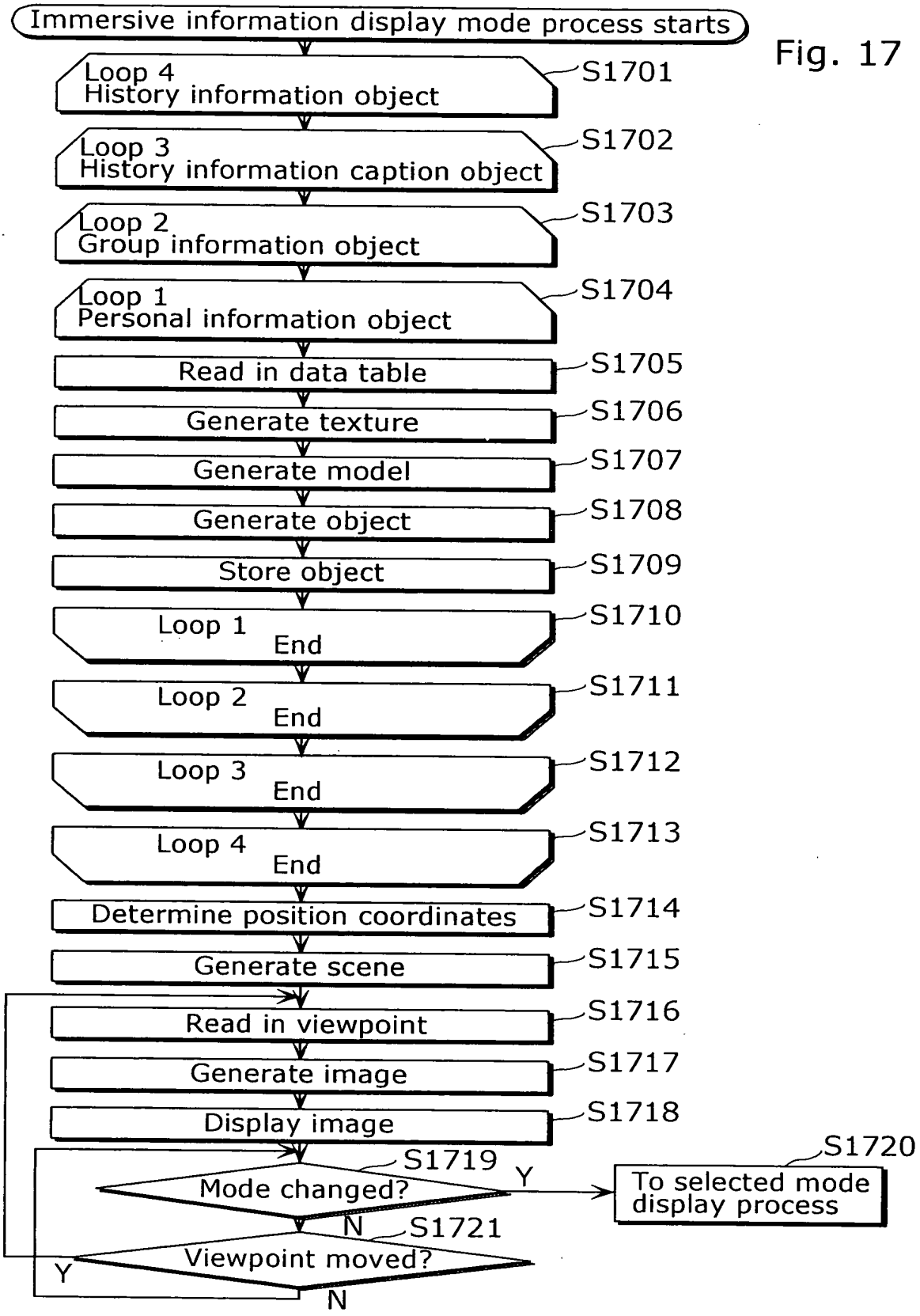

Immersive information display mode process starts
Loop 4
History information object
S1701
Loop 3
History information caption object
S1702
Loop 2
Group information object
S1703
Loop 1
Personal information object
S1704
Read in data table
S1705
Generate texture
S1706
Generate model
S1707
Generate object
S1708
Store object
S1709
Loop 1
End
S1710
Loop 2
End
S1711
Loop 3
End
S1712
Loop 4
End
S1713
Determine position coordinates
S1714
Generate scene
S1715
Read in viewpoint
S1716
Generate image
S1717
Display image
S1718
S1719
Mode changed?
Y
S1720
To selected mode display process
N
S1721
Viewpoint moved?
Y
N

Fig. 17

Fig. 18

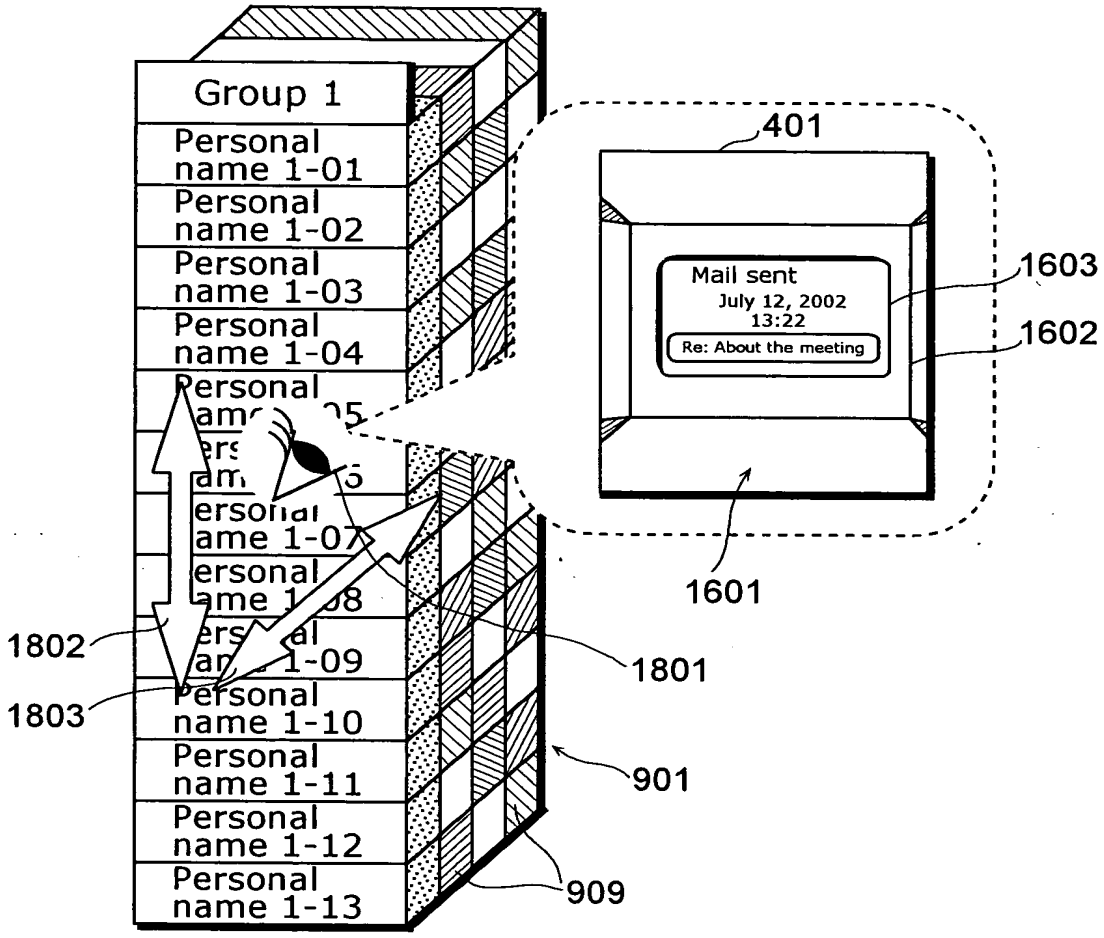

Group 1
Personal name 1-01
Personal name 1-02
Personal name 1-03
Personal name 1-04
Personal name 1-10
Personal name 1-11
Personal name 1-12
Personal name 1-13
401
Mail sent
July 12, 2002
13:22
Re: About the meeting
1603
1602
1601
1802
1803
1801
901
909

Fig. 19

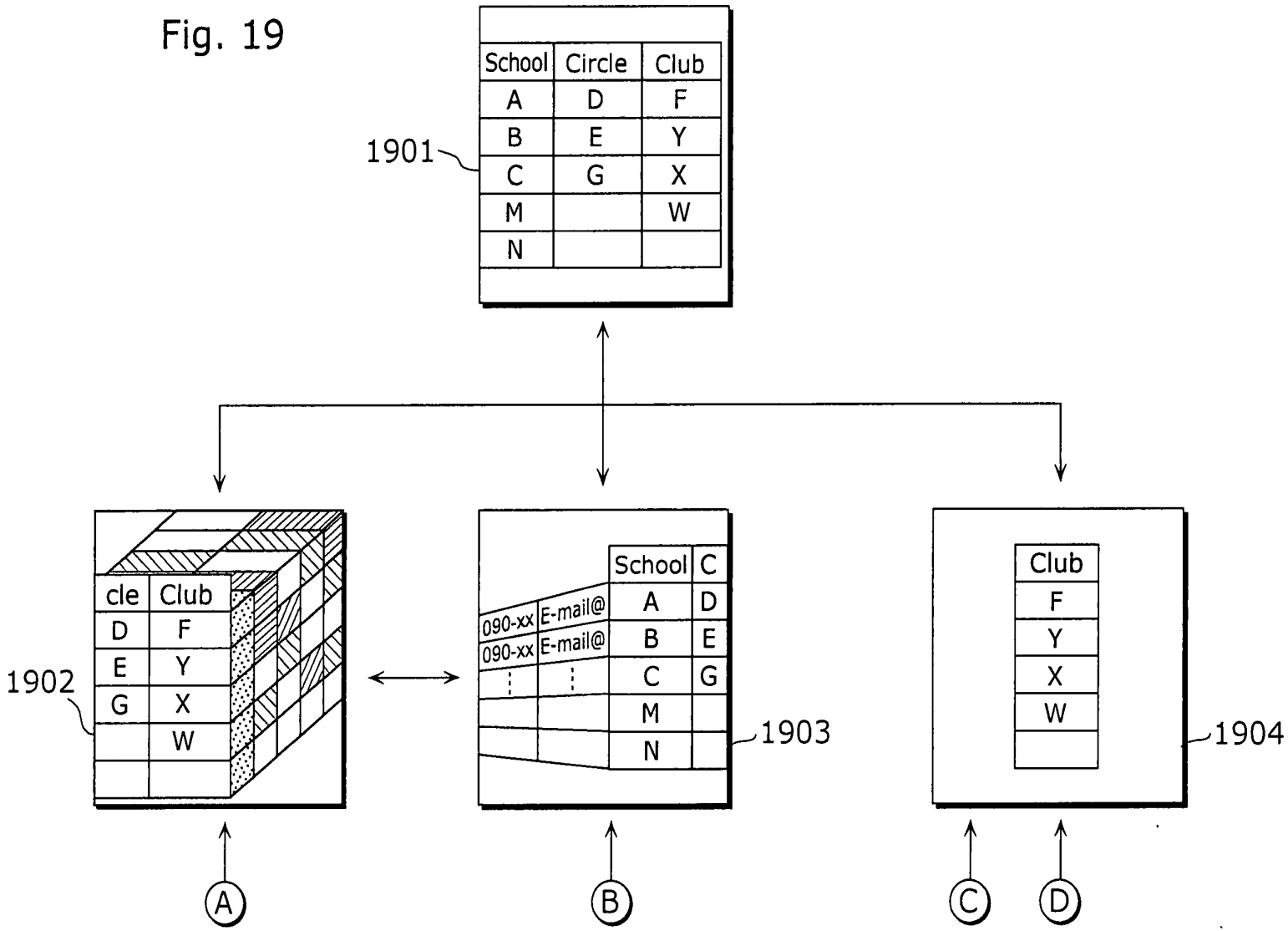
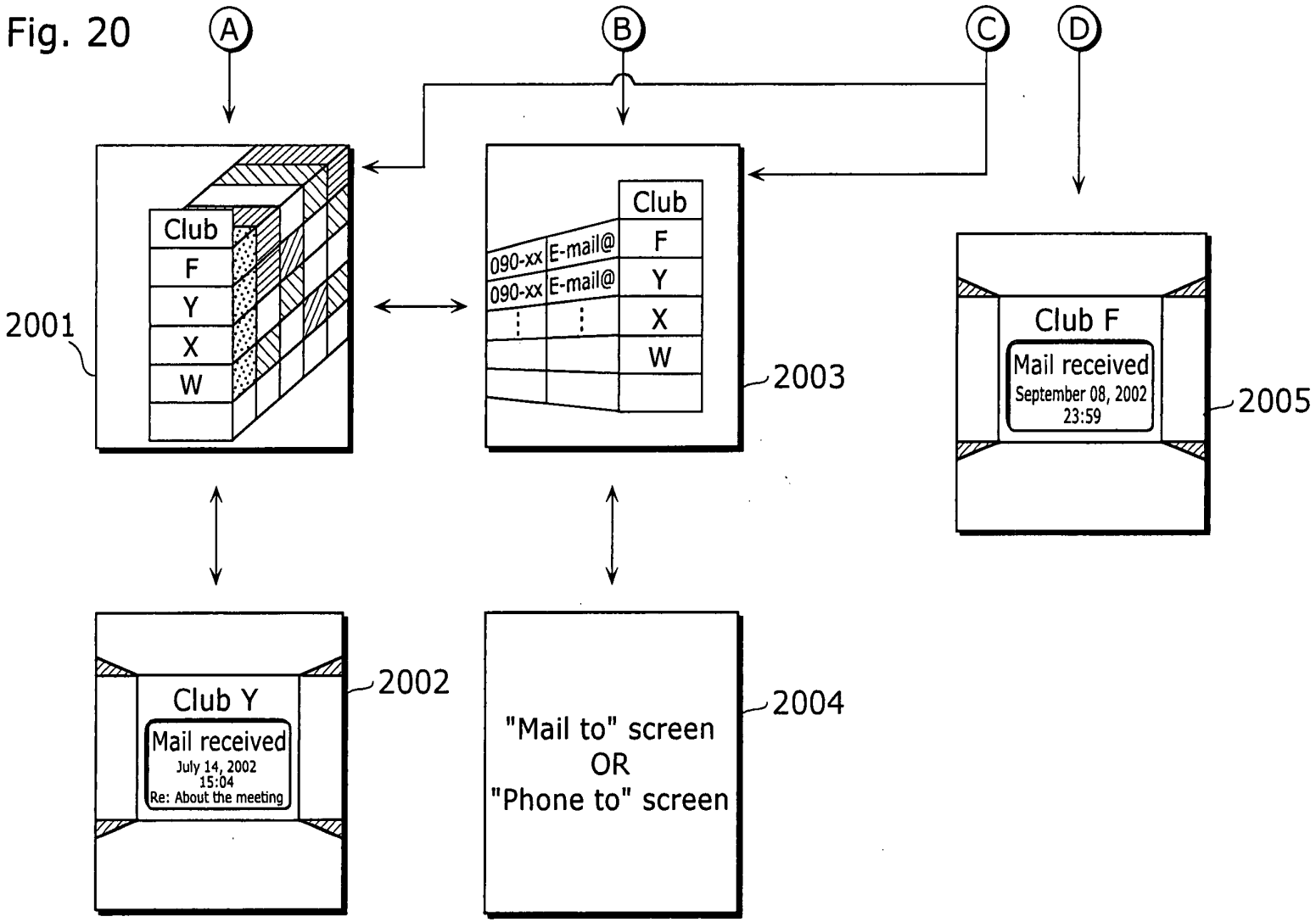

School
Circle
Club
A
D
F
B
E
Y
C
G
X
M
W
N
1901
cle
Club
D
F
E
Y
G
X
W
1902
090-xx
E-mail@
090-xx
E-mail@
School
C
A
D
B
E
C
G
M
N
1903
Club
F
Y
X
W
1904
A
B
C
D

Fig. 20


A
B
C
D
Club
F
Y
X
W
2001
090-xx E-mail@
090-xx E-mail@
2003
Club F
Mail received
September 08, 2002
23:59
2005
Club Y
Mail received
July 14, 2002
15:04
Re: About the meeting
2002
"Mail to" screen
OR
"Phone to" screen
2004